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## MAMMALS OF THE COLLINS-DAY SOUTH AMERICAN EXPEDITION.\*

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In the latter part of 1914, Mr. Alfred M. Collins of Philadelphia and Mr. Lee Garnett Day of New York called upon the writer to discuss plans for a trip to South America. As a result of this meeting and several subsequent ones, it was decided by Mr. Collins and Mr. Day that they would not only finance but personally conduct an expedition to be largely devoted to the collecting of natural history specimens, especially mammals and birds. As finally arranged, the party included Mr. Collins and Mr. Day and their friend Mr. Willard Walker, who also shared in the expense, and representatives of two museums, Mr. George K. Cherrie for the American Museum of Natural History of New York, and Mr. Robert H. Becker for the Field Museum of Natural History. The route chosen led across the continent of South America from west to east through Peru, Bolivia, and Brazil. Sailing from New York December 26, 1914, the party proceeded via Panama to Mollendo, Peru, arriving there on January 15, 1915. Thence they proceeded by rail to Arequipa, from which place a short but successful hunting trip was made to Pampa de Arrieros, Peru, where specimens of guanacos and vicuñas were obtained. Another short stop was made at Puno on Lake Titicaca and from there quick time was made by rail and stage via La Paz, Oruro, Arque, and Parotani to Cochabamba, Bolivia. From Cochabamba it was decided to travel by pack train over a little-used and difficult trail to the port of Todos Santos on the Chaparé River, an affluent of the Mamoré. Owing to heavy rains, this part of the trip was very arduous, but it was successfully accomplished and some collecting was done in spite of untoward conditions. On March 16th a small steamer left Todos Santos with the expedition and arrived at Trinidad on the Mamoré March 20th. Four days later Guajaramerim was reached and thence to Porto Velho on the Madeira the party went by rail, arriving March 29th. From this point to Manaus, no stops were made and, with the exception of Mr. Cherrie who remained on

\*An illustrated general account of this expedition written by Mr. Day was published in the American Museum Journal for January, 1916.

the Amazon near Santarem for a time, the whole party returned directly to the United States.

Notwithstanding the difficult climatic conditions and the limited time which was available for actual field work the collections obtained are of considerable size and importance, especially in view of the very small representation of the fauna of the region traversed which was previously possessed by North American museums. According to the generous plan of Mr. Collins and Mr. Day these collections are to be divided equally by the American Museum of Natural History and the Field Museum of Natural History, the types of new birds remaining with the New York institution and those of new mammals with the Field Museum.

The collection of mammals numbers some 325 specimens belonging to 41 species and subspecies, of which four are new. In the brief account of this collection which follows, I am indebted to Mr. Collins for the notes on the hunting of guanacos and vicuñas.

**Marmosa elegans venusta** Thomas. MOUSE OPOSSUM.

Four specimens, Parotani.

These topotypes are welcome additions to the collection of the Field Museum, as of course they would be to any other. An interesting character shown by two of them which are mature is a rather definite dark spot occupying a considerable space on the side just behind the shoulder. This is colored like the dark dorsal area and forms an interruption in the lower half of the lighter lateral area which in its upper half separates this dark spot from the dorsal area.

**Bradypus tridactylus** Linnaeus. THREE-TOED SLOTH.

Three specimens, Santarem, Brazil. Collected by G. K. Cherrie.

**Hippocamelus antisensis** D'Orbigny. PERUVIAN GUEMAL.

One specimen, Pampa de Arrieros, Peru.

This is an immature male with milk dentition and short, stubby horns. The pelage is somewhat worn but in general the hairs of the body have buffy tips producing a rather pallid effect which is sharply contrasted with a dark blackish brown area on the back and rump just anterior to the base of the tail. The tail itself is entirely white both above and below and the white areas on the inner sides of the legs extend to the hoofs. The dark facial markings, so well developed in the Chilean *H. bisulcus*, are reduced to brownish patches over the eyes.

This species was found up to an altitude of 13,000 feet, in general ranging somewhat lower than the guanaco and vicuña.



**Lama glama huanachus** Molina. GUANACO.

Six specimens, Pampa de Arrieros, Peru.

Well-preserved skins and skulls of three male and two female guanacos and one complete skeleton are in the collection. The herds from which they were obtained are almost if not quite the northernmost now existing and the specimens will be of great interest in determining the geographic variation in the species. This cannot well be attempted until specimens are secured from central Chile, the type locality of Molina's *huanachus*. It is evident, however, that the Peruvian guanacos of this collection are not closely related to the "small Peruvian guanaco" to which Lönnberg has given the name *Lama glama cacsiloensis* and which shows great similarity, at least in certain cranial characters, to the vicugna. In size our specimens are only slightly smaller than the Patagonian guanaco. A skull of an adult male measures as follows: Total length 290 (307)\*; basal length 277 (290); greatest width 148 (146); least postorbital width 61.5 (64); length of three upper molars 59 (63); width across middle of second upper molar 69 (75); greatest length of nasal laterally 63 (78).

Measurements of an adult male, taken in the flesh by the collector, are as follows: Length "from between ears to root of tail" 1300; circumference of upper neck 330; of lower neck in front of shoulder 550; girth behind foreleg 1080; girth at middle of belly 1160; girth at loin 860; base of ear to point of shoulder 650.

**Lama vicugna** Molina. VICUGNA.

Four specimens, Pampa de Arrieros, Peru.

These consist of skins and skulls of two males and one female and skeleton of one male. So far as recorded, they are the only first class specimens of this species ever brought to a North American museum.† This is perhaps on account of the poverty of North American museums in South American material rather than because of the rarity of the animal; but it is evident that the vicugna is not easy to procure even in those localities where it is still common.

Measurements of an adult male, taken in the flesh by the collector, are as follows: Length "from between ears to root of tail" 1250; base of ear to point of shoulder 670; circumference of upper neck 260; of lower neck in front of shoulder 430; girth behind foreleg 840; girth at middle of belly 960; girth at loin 750.

\*Measurements in parentheses are those of a Patagonian guanaco published by Lönnberg. (Archiv. för Zoologi, VIII, No. 19, p. 2, 1913).

†The specimen recorded as *Lama vicugna* by Elliot (Cat. Mamm. Field Mus., p. 37, 1907) proves to belong to another species.

The following account of the hunting of guanacos and vicuñas has been contributed by Mr. Collins:

"Glad we were to reach Mollendo on the west coast of Peru after three weeks sailing from New York. Here we unloaded our sixty pieces of baggage, and owing to the kindness of the Peruvian officials, due to the assistance of the American Minister at Lima, we were passed through the customs without any difficulty, no restriction being placed on the use of our arms, which we felt would be the case while crossing Peru. We were very glad of this as it was our intention to hunt on the highlands for vicuña and guanaco and a small variety of deer.

"We had just enough time to pass our baggage and catch the train which followed the shore for a while and then started to climb to an absolutely barren ground. Suddenly upon reaching an altitude of some 2000 feet we entered the clouds and found a most fertile country, the ground being covered with beautiful flowers. A couple of thousand feet higher we crossed a table-land almost flat, having a sandy soil, the sand being blown by the high winds into numerous dunes, crescentic in shape, which were constantly changing their positions. Again we climbed and twisted through barren mountains, with here and there green, where water was to be found. Finally, we reached Arequipa at an altitude of 7500 feet, and here the train stopped for twenty-four hours in order to give the passengers an opportunity to become accustomed to the altitude.

"The next day we proceeded on our way and at a point 12,500 feet above sea level, called Pampa de Arrieros, we left the train, hearing that at this point the animals we were desirous of getting were to be found. Having finally reached our hunting ground, and with a considerable amount of stored up energy after three weeks idleness on the steamer, it not yet being noon, we at once made arrangements for mules in order to make a hunt that day. After climbing several thousand feet higher, we suddenly came in sight of our game. Dismounting and starting to run after it, we suddenly realized the height at which we had arrived, our hearts beating so rapidly that it became impossible for us to continue. The rest of the day we traveled at a snail's pace after the game, which always kept in a very tantalizing way within sight but out of range. Finding that it would be impossible for us to come up with it, we decided to return to our mules and go back to camp. A sudden downpour drenched us to the skin, and a little later darkness overtaking us, and the chill of night coming on, we suffered intensely from the cold. The great heat of the day, the drenching by rain, and the sudden chilling of the air brought on all of us attacks of *soroche*. It was with great difficulty that we were enabled to get back to our rooms in the



railroad station and all night long the whole party suffered intensely from chills and fever.

"The next day, and for several days following, we hunted these wary animals, and each day becoming more and more accustomed to the altitude, we were able to travel not only greater distances, but at a higher altitude. Upon hearing from the Indians that there was a water hole high up on one of the mountains just below the snow line where game was very plentiful, we planned a hunt with the idea of spending a night at this water hole, believing that just before dark or early in the morning might prove to be the best time to get our game. Hour after hour we traveled, and higher and higher climbed, finding the water hole much farther away than we had supposed and at an altitude which taxed our hearts and lungs to the utmost.

"I will never forget the night spent at this point, 18,000 feet above sea level, in a little shelter of stones which had been erected by the Indians and where they watched for game. What was known as a water hole simply consisted of damp soil where, even by digging, we could not get enough water to satisfy our own thirst let alone that of our mules. All night long I was kept awake by the shaking of my companion who had one chill after another, suffering myself all the time from a most terrific headache and gasping all night for breath. The next morning, as soon as it was light enough for us to see, we hurried down the mountain for several thousand feet, and then as the sun came up, we fell to the ground and were soon fast asleep, exhausted from the night's experience. Not only did the altitude affect us but the air was so dry and the wind on these mountains blew so violently that our faces and hands became badly sunburned. In addition to the entire skin coming off my face four times in ten days, my nose swelled to at least double its normal size, my lips were badly cracked and almost constantly bleeding, and my hands were blistered on the palms as well as the backs.

"It is hard to imagine any animals being able to live where there is such a lack of vegetation, but these sure-footed animals grow fat there. They are seldom hunted by the white man but the Indians are continually after them, making them exceedingly shy and difficult to obtain. While the guanaco and vicugna were found on the same mountains, they were never found together. Those that we obtained were shot at long range. A small deer, the guemal, was found on these same mountains but much lower down, its range not exceeding an altitude of from 12,000 to 13,000 feet, while the vicugna and guanaco were found from 14,000 to 18,000 feet.

"Pampa de Arrieros is a small settlement of a couple of dozen mud houses occupied mostly by the workers on the railroad, a church,

and a railroad station where we succeeded in obtaining rooms. As it was a meal station we were able to get very good food indeed. We hunted mostly from mule back but had considerable difficulty in getting fresh mules as the climbing was exceedingly hard on them, and it seemed to be against the principles of the owners to feed them any more than what they were able to pick up for themselves, the consequence being that after a mule had been ridden for a couple of days it became so exhausted it was worthless to us.

"The gait of the guanaco is a canter or easy lope, and by bounds they attain great speed. Reddish brown on back and lighter under parts. Cool gray tone of head and ears; head held erect. Neigh of horse, neck of camel, feet of deer, and swiftness of the devil. The call is a weird, tremulous sound and half idiotic neigh."

**Sciurus aestuans gilvicularis** Wagner. SQUIRREL.

Four specimens (skins only), Santarem, Brazil. Collected by G. K. Cherrie.

**Sciurus\* ignitus** Gray. SQUIRREL.

One specimen, Roquefalda, Bolivia, collected February 19.

This specimen is provisionally regarded as representing the species described by Gray in 1867 from a squirrel taken in "Bolivia" by Bridges. It agrees with the original description and disagrees with specimens previously referred to this species in at least four respects: (1) in its relatively soft full pelage, (2) in its dark chestnut ears and postauricular spots, (3) in its white or whitish chin and throat, and (4) in its whitish under parts more or less grizzled and washed with buffy. I am not informed as to whether or not Gray's type is still preserved, but without examination of it, the probability that it belongs to this species rather than to the one to which the name *ochrescens* has been applied seems very great.

**Sciurus irroratus ochrescens** Thomas. SQUIRREL.

One specimen, Chaparé River, below Todos Santos.

This is obviously an example of the form described by Thomas as *Sciurus cuscinus ochrescens* which Allen† has identified with Gray's *Macroxus ignitus*. It does not agree with Gray's description, however, for the under parts are entirely ochraceous and it does not have the

\*Without more study than I am at present able to give, I do not feel justified in using the generic terms recently proposed by J. A. Allen in his Review of South American Sciuridæ. His position seems very radical, and it is doubtful if the same standards could be applied successfully in other groups.

†Bull. Am. Mus. Nat. Hist., XXXIV, pp. 204-206, May, 1915.



"cheeks, chin, and throat white." It is difficult, also, to appreciate "back of the ears bright red bay"; and since both of these features are found in another specimen obviously belonging to a different species, it seems necessary to recognize both *ochrescens* and *ignitus*.

**Sciurus langsdorffi** Brandt. LANGSDORFF'S SQUIRREL.

Two specimens, Porto Velho, Madeira River, Brazil.

**Oryzomys** sp.

One specimen (skull only), Parotani.

Beyond the determination of this skull as a representative of the *longicaudatus-stolzmanni* series, no further identification is possible with the material at hand. Doubtless it is not the same as the species recorded by Thomas\* from Charuplaya in eastern Bolivia under the name *stolzmanni*, for Parotani is on the high plateau and Charuplaya is almost or quite within the Amazonian forest.

**Oryzomys chaparensis** sp. nov.

Type from Todos Santos, Chaparé River, Bolivia. Altitude about 1200 feet. No. 21,330 Field Museum of Natural History. Adult male. Collected March 15, 1915 by R. H. Becker.

*Characters.* A species of medium size with the tail slightly longer than the head and body, the pelage rather short, and the throat and inguinal region with self-colored hairs; mammae (in one specimen) 1-2=6.

*Color.* Upper parts ochraceous buff liberally mixed with dusky lines, producing a general effect approaching wood brown or Isabella color; head, face, and sides practically like back; ears dusky outside, cinnamon inside; a poorly defined line of ochraceous buff between the color of the upper parts and the under parts; feet white; outer side of tarsal joint broadly and distinctly marked with brownish; tail finely scaly and except upon close examination appearing naked, dusky above and for its distal third below, whitish for its proximal two-thirds below; under parts creamy, the hairs of the belly and breast with dark bases, those of the throat and inguinal regions and the median part of the inner sides of the legs self-colored.

*Skull.* Skull relatively long and slender; interorbital region rather narrow and elevated, the anterior half of the frontals being distinctly higher than the posterior; supraorbital edges sharp and elevated but not beaded; nasals broad and with considerable median depression posteriorly; zygomatic plate broad, convex in front; palatine foramina short

\*Ann. & Mag. Nat. Hist., (7), IX, p. 130, 1902.

and forming obtuse angles in front and behind; audital bullæ small; teeth small. As compared with a skull of *O. eliurus* from Sapucay, Paraguay, that of *O. chaparensis* is slightly larger and more angular; the interorbital region is a little wider, higher, and more sharply edged; nasals broader; palatine foramina shorter.

*Measurements.* Type: Total length 215; head and body 104; tail 111; hind foot 26; ear from notch (dry) 14. Skull of type: Greatest length 26.8; basilar length 21; zygomatic breadth 13.5; breadth of braincase 11.2; interorbital constriction 4; nasals 10.5x3.5; palatine foramina 4.4x1.9; diastema 6.9; length of zygomatic plate 2.7; upper toothrow 3.6.

*Remarks.* Although the state of knowledge of the genus *Oryzomys* makes it difficult or practically impossible to determine the exact relationship of isolated species, it is apparent that this one does not show many similarities to any of the recently described Peruvian and Bolivian species and it is therefore probable that its allies are among the species described by early authors from eastern South America. Of those available for comparison, *O. eliurus* is nearest in size but its coloration is of the usual type and its skull differs in various ways. The coloration of the under parts in *O. chaparensis* is characteristic, for although the differentiation of self-colored light areas on the pectoral and inguinal regions is not unusual among rodents, it is relatively rare in the genus *Oryzomys*.

Only two specimens have been examined, an adult male and a female. This female was nursing young and has the mammæ functionally enlarged and conspicuous but shows no trace of more than three pairs whereas four pairs are normal in *Oryzomys*. The absence of the anterior pair of pectoral mammæ may be accidental in this specimen or it may be a peculiarity of the species.

### ***Öecomys mamoræ* Thomas.**

Ten specimens, Todos Santos, Chaparé River.

Since their external and cranial measurements agree closely with those of the published description of this species, there is scarcely any reason to doubt that these specimens are practically typical representatives of it and so far as recorded the only ones extant except the type which is preserved in alcohol and therefore not trustworthy for color characters. The color, especially that of the under parts, as shown by the present series, is somewhat variable. In the majority, particularly those not fully mature, the rich, tawny ochraceous lateral line which borders the color of the upper parts widens and extends with only slight dilution across the middle of the belly and forward as a light wash to the midpectoral region. Across the middle of the belly and breast

there is tendency for the hairs to have dark bases, the throat, axillæ, and inguinal regions being always white to the roots of the hairs. In one old female the entire under parts are pure snowy white sharply separated from the upper parts by a broad (5 mm.) tawny ochraceous lateral line. Both fore and hind feet are more or less brownish, and the ears, while usually tawny, are sometimes dusky antero-internally.

Two adults present the following flesh measurements: Total length 333, 328; head and body 149, 147; tail 184, 181; hind foot 27, 27.

### ***Hesperomys callosus boliviæ* Thomas.**

One specimen, Trinidad.

On geographic grounds, this specimen might be either *H. callosus* or *H. c. boliviæ*; and with nothing more than descriptions for comparison, its identification cannot be regarded as positive. The tooth-row measures 4.1 mm., which is exactly the length given for that of the type of *H. c. boliviæ*, and other cranial measurements correspond closely. External measurements are as follows: Total length 200; head and body 122; tail 78; hind foot 23.

### ***Phyllotis (Graomys) domorum* Thomas.**

Three specimens, Parotani.

These are typical examples of this species and from the region of the type locality. Their examination has been of particular interest in connection with the grouping of certain South American Muridæ recently made by Thomas.\* A small group including the present species has been given generic rank under the name *Graomys*, but this group is so closely allied to typical *Phyllotis* that it seems better to treat it as a subgenus rather than as a genus. This conclusion is largely influenced by a consideration of *Phyllotis amicus*, a species which is assigned inferentially by Thomas to *Phyllotis* but which shows such affinity to *Graomys* that the exceedingly close relationship between the two groups can scarcely be doubted. In all external features except size the resemblance of *P. amicus* and *P. domorum* amounts to practical identity. The very soft, satiny pelage and the pure white self-colored areas of the under parts are very characteristic. The skull of *P. amicus* has the short, rounded braincase of typical *Phyllotis* but its very broad frontals and its slightly undercut zygomatic plate show very decided approach to the condition in *Graomys*. It lacks the definite supraorbital bead but the supraorbital border is trenchant and even slightly elevated. The second upper molar is more nearly five-parted than in true *Phyllotis*, and in this respect also there is resemblance to

\*Ann. & Mag. Nat. Hist., (8), XVII, pp. 139-143, Jan., 1916.



*P. domorum*. In fact it seems necessary to include the species *amicus* as a peripheral member of the group *Graomys* and to recognize its connectant character by treating that group as a subgenus co-ordinate with typical *Phyllotis*.

### **Akodon puer** Thomas.

One specimen, Parotani.

This specimen agrees closely with the original description of *A. puer*, the principal discrepancy being in the color of the ears which are mixed grayish and dusky in some contrast to the body color. Flesh measurements are: Total length 169; tail 75; hind foot 20.

### **Akodon varius** Thomas.

One specimen, Parotani.

Although comparison with the type from Cochabamba would be desirable, there seems little reason to doubt the identity of this specimen, especially since Thomas in the original description has referred to another from this locality. Flesh measurements are: Total length 203; head and body 108; tail 95; hind foot 26.

### **Akodon dayi** sp. nov.

*Type* from Todos Santos, Chaparé River, Bolivia. No. 21329 Field Museum of Natural History. Adult male. Collected March 15th, 1915 by Robert H. Becker. Original No. 784.

*Characters*. A medium-sized species of dark, rich, color. Somewhat allied to *A. cursor* but very much darker with larger hind feet and a heavier and decidedly deeper skull. Similar in color to *A. aerosus baliolus*, but under parts paler and more heavily washed with fulvous; cranial characters widely different.

*Color*. Upper parts varying from Vandyke brown to burnt umber; middle of back scarcely or not at all darker than sides; under parts rich rufous; ears blackish without mixture of fulvous; feet brownish black; tail blackish above and below.

*Skull*. As compared with that of *A. aerosus*, the skull is long and high, both incisor and molar teeth are heavier, and the braincase is narrower; the supraorbital edges are sharp and continuous with a definite ridge which crosses the parietals to the occipito-squamosal suture, where it turns abruptly downward and becoming more decided forms a sharp vertical ridge to the mastoid bulla; the occiput scarcely projects beyond the vertical plane of the back of the interparietal which is often sharp-angled behind, forming with the supraoccipital a definite inion; the zygomatic plate is broad and nearly vertical or slightly con-

cave in front; the nasals end posteriorly in a point which greatly exceeds the endings of the premaxillæ. As compared with the skull of *A. cursor*, that of *A. dayi* shows a slight resemblance in the development of the parietal ridge, but the entire skull is so much deeper and heavier that detailed comparison is unnecessary.

*Measurements.* Average of ten adults: Total length 198 (186-214); head and body 119 (110-134); tail 79 (75-84); hind foot 26 (25-27). Skull of type: Greatest length 30.8; basilar length 24.8; zygomatic breadth 15.6; interorbital constriction 5.6; median length of frontals 10.5; interparietal 7.5x1.7; nasals 11.7x3.9; palatine foramina 7.4x2.8; diastema 8; median length of zygomatic plate 3.3; upper tooththrow 4.9.

*Remarks.* Although having considerable color resemblance to *Akodon a. baliolus*, this species differs from it so widely in cranial characters that it is probable it has no close affinity and its nearest relatives perhaps are to be sought among the species of eastern Brazil. The only available species of this region which shows even slight similarity is *A. cursor*, but this is smaller and paler and has a relatively low flattened skull.

A series of thirty-nine specimens of this new species was obtained mostly about the half-dozen native huts forming the small village of Todos Santos. All of them give evidence of having been very fat and many have white hairs scattered through the pelage of the rump and back, both features being possible indications that they were leading slightly abnormal existences. Their presence in the village in large numbers was doubtless due to the prevalence of heavy rains and floods in the surrounding dense forest.

#### **Dasyprocta variegata** subsp. VARIED AGOUTI.

Two specimens, Porto Velho, Brazil.

These are provisionally referred to this species of which no typical examples are at hand.

#### **Proechimys breviceaudus securus** Thomas. SPINY RAT.

Six specimens (2 ad., 4 yg.), Todos Santos, Chaparé River.

These are referred to this form largely on geographic grounds. So far as can be determined from comparison with descriptions, they combine the characters of *P. securus* and *P. bolivianus*, having the short foot of the one and the long narrow skull of the other. Their resemblance to *P. breviceaudus* is striking not only in cranial characters but also in external appearance, especially when the variability of *breviceaudus*, as previously shown,\* is considered. In one specimen there is consider-

\*See Field Mus. Nat. Hist., Zool. X, p. 168, 1914.

able fulvous on the sides of the belly and likewise on the throat; on the other the under parts are practically pure white. The upper parts are quite as in *P. brevicaudus*. I see no objection to treating this form, if it be a valid one, as a subspecies of *brevicaudus*, for whatever local variations there may be, it is beyond speculation that all are relatively recent derivatives of a common stock. The fact of such slight differentiation in animals from localities so distant from each other is also an indication of general continuity of distribution and probable sub-specific relationship.

Measurements of the two adults are: Head and body 259, 243; hind foot (dry) 50, 47.5; greatest length of skull 57.8, 60.2.

### **Ctenomys opimus** Wagner. TUCO-TUCO.

One specimen, Oruro.

This is somewhat immature and noticeably paler than a single topotype of *C. opimus* with which it has been compared. Thomas\* has referred specimens from Oruro to this species and has specially mentioned a wide color variation among individuals from one locality, so our specimen probably has no extraordinary peculiarities. It is to be remembered, however, that rodents of fossorial subterranean habits are usually subject to much local differentiation, and when our knowledge of the tuco-tucos is on a par with that of their North American analogues, the Geomyidæ, we will doubtless recognize a much larger number of forms than at present.

### **Cavia musteloides boliviensis** Waterhouse. BOLIVIAN CAVY.

Twenty-four specimens, Parotani.

A series of this size all taken at one time and place affords a valuable opportunity to observe variation, especially since such series thus far have seldom been preserved. In both color and cranial features considerable variation appears; rather more, generally speaking, than is found among cricetine and murine rodents. The color of the upper parts is relatively uniform throughout the series, the general tone being slightly darker or lighter according as the buffy annulations of the black-tipped hairs are narrower or broader. The broad, basal color of the hairs of the upper parts varies narrowly between shades of mouse gray and smoke gray always being darker mid-dorsally than laterally. The color of the under parts ranges from pale buff or creamy to the roots of the hairs (except on the throat) to creamy whitish with a dark grayish undercolor extending throughout except on the inner sides of the legs where the hairs are pale and self-colored. This latter type is

\*Ann. & Mag. Nat. Hist., (7), IX, p. 227, 1902.



the predominant one, and in general the effect on the under parts is grizzled. The variation in the width of the buffy annulations on the hairs of the upper parts is correlated with the general extent of buffiness; and while some specimens have distinct, buffy eye rings and postauricular spots, others have these markings whitish rather than buffy or so reduced as to be scarcely apparent. The series includes several immature examples not more than half-grown, and these are colored practically as in the adults. It thus appears that there are two styles of coloration one in which the under parts are grayish or whitish and the other in which they are buffy. Comparing extremes of the two styles, one might easily entertain the idea of their specific distinctness.

Examination of the skulls, of which about half are unbroken, shows the usual slight variations in the size and shape of nasal and interparietal bones, but the most striking irregularity is found in the size of the audital bullæ, the horizontal diameter of which ranges from twelve to fourteen millimeters in specimens of the same sex and apparently the same age.

In separating *Cavia boliviensis* from *C. musteloides*,\* Thomas has mentioned only characters which appear to be within the limits of the variation in this Parotani series, and it is therefore possible that *C. boliviensis* should be treated as a synonym of *C. musteloides*. However, in the absence of specimens from Sahama, which has been selected as the type locality of *musteloides*, it does not seem quite safe to conclude that no differentiation exists. But it is reasonably certain that *boliviensis* is at most no more than a subspecies of *musteloides*.

A note in Mr. Becker's field catalogue states that the cavies were obtained on rocky hills surrounding the fertile irrigated valley in which Parotani is situated.

### **Viscaccia punensis** Thomas. TITICACA VISCACHA.

One skin without skull, Puno, Peru. Collected by G. K. Cherrie, January 22nd.

The pelage of this individual is in worn, ragged condition consisting principally of the thick "wool hairs." The dorsal line is barely apparent, and there are no white axillary spots. As compared with specimens of *V. inca* and *V. subrosea* it is darker, more brownish, throughout. Flesh measurements are as follows: Total length 320; tail 280; hind foot 90; ear 65.

### **Canis culpæus andinus** Thomas. BOLIVIAN WOLF.

One specimen, Pampa de Arrieros, Peru. Altitude 13,500 feet.

\* Ann. & Mag. Nat. Hist., (8), VIII, p. 254, 1911.

**Nasua montana** Tschudi. MOUNTAIN COATI.

Two specimens, Porto Velho, Brazil.

These dark-colored and short-tailed coatis, one adult and one immature, are referred to *N. montana* with considerable doubt; but, with such material as is at hand for comparison, no better disposition of them is possible.

**Felis pardalis chibigouazou** Griffith. SOUTHERN OCELOT.

One specimen, Porto Velho, Brazil.

Although not wholly agreeing with descriptions, this specimen may be referred tentatively to this form on geographic grounds.

**Felis pardalis ocelot** Smith. NORTHEASTERN OCELOT.

An imperfect skin without skull obtained at Santarem by G. K. Cherrie is in the collection. It is closely similar to a specimen from Georgetown, British Guiana, both being richly rufescent dorsally and having numerous small shoulder spots and the body markings large, bold, and distinct. These are characters described and figured by Hamilton Smith for his Ocelot No. 2 to which Mearns\* has regarded the name *Felis ocelot* applicable. I have therefore ventured to adopt this name for these specimens and to consider Guiana as the type locality.

**Tayra barbara madeirensis** Lönnberg. MADEIRA TAYRA.

One specimen, Todos Santos.

This specimen has nearly or quite the coloration described for this subspecies, but the hair is not especially short. The hinder parts of the animal are blackish brown and the tail quite black evidently very different from the pale color of the type of *T. b. brunnea* which is from the relatively nearby region of the Beni River.

**Glossophaga soricina** Pallas. COMMON GLOSSOPHAGA.

One specimen, Trinidad.

**Artibeus anderseni**† sp. nov. ANDERSEN'S ARTIBEUS.

Type (in alcohol) from Porto Velho, Brazil. No. 21331 Field Museum of Natural History. Adult male. Collected April 3, 1915 by R. H. Becker. Original No. 886.

*Characters.* Similar to *Artibeus toltecus rarus*, but smaller and darker, being quite the smallest species of *Artibeus* yet known; forearm 34-36. Color dark brownish above and below, no evident light facial stripes; hairing on limbs and membranes as in *A. cinereus* and *A. toltecus*.

\*Proc. U. S. Nat. Mus., XXV, p. 239, 1902.

†For Dr. Knud Andersen of the British Natural History Museum.



Skull with the facial region relatively short and the palate short and wide; teeth slightly smaller than in *A. toltecus rarus*, first upper molar reduced in size, especially as compared with the second which it exceeds only slightly.

*Measurements.* Type: Head and body 45; hind foot 10; pollex with claw 7; forearm 35; third metacarpal 32.7; fourth metacarpal 32.3; fifth metacarpal 33; inner margin of ear conch 11; tibia 13; calcar 3.8. Skull of type: Greatest length 18.2; basal length 16.3; mastoid width 9.5; zygomatic width 11; width of braincase 8.6; maxillary width across m.<sup>1</sup> 7.8; width across cingula of canines 5.4; length of palate 7.1; upper tooththrow including canine 5.8.

*Remarks.* No specimens of any of the smaller *Artibeus* have heretofore been obtained from Brazil or elsewhere in central South America between Surinam, where *A. quadrivittatus* occurs, and Ecuador and Peru, where *A. toltecus rarus* and *A. glaucus* have been found. Although obviously related to all of these and occupying an intermediate region, the present species is probably distinct. It is characterized chiefly by small size, and by its short-faced skull and reduced first upper molar.

Four specimens are in the collection, all in alcohol; hence no accurate description of the color is possible. Actual comparisons have been made only with two specimens of *A. toltecus rarus* from near the type locality.

### ***Artibeus jamaicensis lituratus* Lichtenstein.**

One specimen, Santarem, Brazil. Collected by G. K. Cherrie.

### ***Molossus obscurus* Geoffroy. DUSKY MOLOSSUS.**

Eleven specimens, Trinidad (7), Todos Santos (1), Porto Velho (2).

This common and widely distributed species is well represented. The specimens show no obvious distinctions from others from eastern Brazil.\*

\*A pale form of *M. crassicaudatus*, first noticed in this connection, may be described briefly as follows:—

### ***Molossus crassicaudatus tecticola* subsp. nov.**

Type from Juá, near Iguatú, Ceara, Brazil. No. 20221 Field Museum of Natural History. Adult male. Collected August 21, 1913 by R. H. Becker.

*Characters.* Similar to *M. crassicaudatus* and *M. obscurus*, but very much paler, the general color of the upper parts being brownish Isabella color with the bases of the hairs whitish buff; under parts still paler, a sort of vinaceous drab. Skull practically as in *M. crassicaudatus*.

Type: Total length 103; tail 38; foot 11; forearm (dry) 39.

This is a well marked form occupying the arid parts of eastern Brazil and although there is much color variation among specimens from other parts of South America, it seldom approaches the degree of paleness shown by all specimens of this form. Eight skins and thirty-five alcoholics have been examined.

**Eumops bonariensis** Peters.

Twenty-nine specimens, Trinidad.

These agree very closely with the original description of this species as well as with specimens from east-central Brazil. No comparison with specimens from Argentine or Paraguay has been possible.

**Saccopteryx bilineata** Temminck. STRIPED BAT.

Seven specimens, Porto Velho, Brazil.

**Myotis nigricans** Maximilian. BLACKISH BAT.

One hundred and twelve specimens. Junction of San Antonio and Espirito Santo rivers (25), Todos Santos (77), Trinidad (10).

The name *nigricans* is here used in the inclusive "blanket" sense. Should an east Bolivian form of this group prove recognizable the name *hypothrix*\* will be available and these specimens may perhaps be regarded as typical.

**Leontocebus weddelli** Deville. WEDDELL'S MARMOSET.

One specimen, Porto Velho, Brazil.

So far as can be judged from descriptions alone, this specimen is typical of this species. The white frontal marking is well developed. The hind feet are not wholly black but have considerable mixture of chestnut.

**Callicebus donacophilus** D'Orbigny. TITI MONKEY.

Two specimens, Todos Santos.

These are almost wholly russet brown on the upper parts, the hairs being faintly annulated with darker and without any distinct grayish areas. The hands and feet and tail are abruptly grayish in sharp contrast. The median under parts and the inner sides of the legs are bright clear tawny.

**Callicebus caligatus** Wagner. TITI MONKEY.

One specimen, Porto Velho, Brazil.

Without material for comparison, it is difficult to make positive identification of this specimen. It seems probable that it may be intermediate between *C. caligatus* and *C. brunneus* and may be referred tentatively to the former. The tail is mostly dark brown superficially, but the hairs are light at the base and finely specked or annulated with

\*D'Orbigny & Gervais, Voy. Amér. Mérid., IV, Mamm., p. 16, 1847.

brownish. At the tip of the tail the terminal tuft of hairs is wholly light-colored, practically white, but with innumerable, fine peppery annulations. The under parts are mixed with blackish and chestnut, the blackish predominating.

**Saimiri sciurea collinsi** subsp. nov. COLLINS SQUIRREL MONKEY.

Type from Fazenda Teso, near Soure, Marajo Id., Brazil. No. 19534 Field Museum of Natural History. Adult male. Collected November 15, 1911 by E. Snethlage.

*Characters.* Similar to typical *Saimiri sciurea*, but hands and feet darker, more richly colored; white area around ears very narrowly or not continuous with white surrounding eyes; back much paler, less fulvous.

Upper parts in general similar to those of *S. sciurea*, but head, shoulders, and foreback almost wholly grayish, the median suffusion of fulvous reduced to the merest trace; middle and hind back with a strong tinge of fulvous but much paler than in *sciurea*; hands and feet and lower limbs tawny rather than orange ochraceous; white face marking not broadly continuous with white around ears, but separated from it by a grizzled area connecting the color of the top of the head with the gray patch on the lower cheek; under parts and tail practically as in *sciurea*.

Skull and teeth small.

*Measurements.* Type: Total length 660; head and body 249; tail 411; hind foot 86.

Skull of type: Greatest length 63.6; zygomatic breadth 37.3; breadth of braincase 34.6; palatal length 17.5; upper toothrow (molars and premolars) 12.8; width of first upper molar 3.9.

*Remarks.* A single specimen of a squirrel monkey purchased in the market at Para is included in the collection brought back by the expedition and has led to comparisons showing rather marked differences between the animal of the lower Amazon region and that of Guiana to which the name *sciurea* restrictively applies. Comparison has not been possible with *S. madeirae* and *S. macrodon* which are doubtless related, although apparently not quite so closely as is typical *sciurea*.

Specimens from the Rio Branco region in northern Brazil agree closely with typical examples of *sciurea* from Georgetown, British Guiana.

**Saimiri boliviensis** D'Orbigny. BOLIVIAN SQUIRREL MONKEY.

Two specimens, Todos Santos.



**Aotus boliviensis** Elliot. BOLIVIAN NIGHT MONKEY.

Three specimens, junction of San Antonio and Espirito Santo rivers.

All of these are females and seem to be typical representatives of this form. They were shot by Mr. Collins at about sunrise on the morning of March 5th.

**Cebus fatuellus peruanus** Thomas. PERUVIAN CAPUCHIN MONKEY.

Four specimens, Todos Santos (1), Porto Velho (3).

An adult male and female and two immature examples furnish some variation in color, and in the present confused state of knowledge of the monkeys of this genus about all that can be said of these particular ones is that they are probably related to *C. fatuellus*.

The adult male has the sides of the body clay color becoming darker toward the mid-dorsal line where a dark brownish line extends from the occiput to the tail; top of head black narrowly surrounded with pale buffy mixed with black; a dark line passing in front of ears and under chin; proximal half of outer side of arms light creamy buff; distal half of arms and legs black mixed with buff and ochraceous; toes with a few grayish hairs mixed with the black; tail black, the hairs of basal third with yellowish tips.



ON THE RANGE OF THE GUANACO AND THE VICUGNA.



VICUGNAS.

Photographs by A. M. Collins.







GUANACO "RING" OR GATHERING PLACE.



REGION INHABITED BY THE GUEMAL.  
Photographs by A. M. Collins.















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